

- 17 <sup>4</sup> 52. A method as claimed in Claim 1, wherein said bone anchor is a self tapping bone screw anchor comprising a distal bone-piercing tip portion and a proximal portion of smaller diameter than said tip portion, said proximal portion comprising an external spiral thread, and wherein said proximal portion is crimped onto said suture to simultaneously secure said suture and form said proximal portion into a driving shape.
- 18 <sup>17</sup> 53. A method as claimed in Claim 52, wherein said driving shape is non-circular.
- 19 <sup>17</sup> 54. A method as claimed in Claim 52, wherein said proximal portion is crimped to form a hexagonal shape.
- 20 <sup>4</sup> 55. A method as claimed in Claim 1, wherein said bone anchor comprises a bone-boring tip and a rearwardly-located proximal body portion, said body portion being provided with screw threads for facilitating insertion of said bone anchor into bone; said body portion having a rear-end portion of a non-circular shape; and wherein said bone anchor is inserted using a bone anchor inserter, said bone anchor inserter comprising a rotatable driving socket of a shape corresponding to said non-circular shape of said rear-end portion of said body portion; the diameter of said driving socket being less than the maximum diameter of said screw threads of said bone anchor.
- 21 <sup>20</sup> 56. A method as claimed in Claim 55, wherein said bone anchor inserter further comprises shut-off indicating means associated with said bone anchor inserter to detect a change in torque during insertion of said bone anchor into bone.
- (B) <sup>5</sup> 6 57. A method as claimed in Claim 56, wherein said bone anchor inserter further comprises shut-off indicating means associated with said bone anchor inserter to detect a change in torque during insertion of said bone anchor into bone.
- 22 <sup>20</sup> 58. A method as claimed in Claim 56, further comprising bone contact means associated with said bone anchor inserter and said driving socket, said bone contact means being of a greater diameter than the maximum diameter of said screw threads of said bone anchor.
- 7 <sup>5</sup> 59. A method as claimed in Claim 58, wherein said bone anchor inserter further comprises suture protective means to protect said suture as said bone anchor is driven into bone.
- 23 <sup>20</sup> 60. A method as claimed in Claim 58, wherein said bone anchor inserter further comprises suture protective means to protect said suture as said bone anchor is driven into bone.
- 4 <sup>5</sup> 61. A method as claimed in Claim 58, wherein said bone screw anchor inserter comprises torque sensing means for detecting the decrease in torque acting on a bone anchor as it is inserted into bone.

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- 9 62. A method as claimed in Claim ~~61~~<sup>8</sup>, wherein said torque sensing means is connected to a visual light which illuminates upon the decrease of said torque acting by said bone anchor inserter on a bone anchor as it is inserted into bone.
- 10 63. A method as claimed in Claim ~~61~~<sup>8</sup>, wherein said torque sensing means provides the user of said bone anchor inserter with an indication that said torque acting on said bone anchor by said bone anchor inserter has decreased.
- 11 64. A method as claimed in Claim ~~63~~<sup>10</sup>, wherein said indication is tactile.
- 12 65. A method as claimed in Claim ~~63~~<sup>10</sup>, wherein said indication is audible.
- 13 66. A method as claimed in Claim ~~63~~<sup>10</sup>, wherein said indication is visual.
- 14 67. A method as claimed in Claim ~~63~~<sup>10</sup>, wherein said indication is accomplished by the combination of a spiral ramp located at the driving end of the bone anchor inserter which causes a washer with a mating head and imbedding spikes to ride thereover such that the spikes embed into the surface of the bone upon maximum desired insertion of said bone anchor into bone, and the torque of said imbedding causes said washer to glide over and then slip back onto said ramp.
- 21 68. A method as claimed in Claim ~~67~~<sup>4</sup>, wherein said suture is threaded through the patient's tongue using a suture passer, said suture passer comprising:  
a) a body defining a bore passing therethrough, said body having an inner wall; and  
b) a rod portion, said rod portion located in said hollow body, said body being provided with an opening for threading of a suture into said body, said rod axially movable within said body to slide within said body past said opening to secure a suture into said body by wedging the suture between said rod and said inner wall.
- 25 69. A method as claimed in Claim ~~68~~<sup>2</sup>, wherein said suture passer further comprises a piercing tip.
- 26 70. A method as claimed in Claim ~~68~~<sup>21</sup>, wherein said rod of said suture passer is provided with a resilient forward end which when extended from said hollow body splits outwardly to provided a longitudinal forward facing opening, said opening closing when said forward end is retracted into said rod.
- 27 71. A method as claimed in Claim ~~70~~<sup>24</sup>, wherein said forward end of said rod splits into sections forming, when retracted into said rod, said piercing tip.
- 28 72. A method as claimed in Claim ~~71~~<sup>4</sup>, wherein said suture is attached to an implantable electrode for implantation within a patient and capable of activating a nerve for controlling the position of the tongue; and further comprising the step of implanting an

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induction coil in the patient in electrical connection with said electrode.

29 73.

<sup>28</sup>  
A method as claimed in Claim <sup>28</sup>72, further comprising the step of providing an externally positionable driving coil for location outside the patient, and drivable with appropriate current to create a magnetic field and induced current in said induction coil for delivering energy to said induction coil such that said induction coil can deliver energy to said implantable electrode to activate a patient's nerve.

30 74.

<sup>29</sup>  
A method as claimed in Claim <sup>29</sup>73, further comprising the step of providing an electric current controller for creating and controlling said magnetic field in said driving coil.

31 75.

<sup>30</sup>  
A method as claimed in Claim <sup>30</sup>74, further comprising an external sensor in electrical connection with said controller, said sensor being capable of detecting a characteristic of airway obstruction, and when so detecting, providing an electrical signal to said controller to activate said driving coil.

32 76.

<sup>31</sup>  
A method as claimed in Claim <sup>31</sup>75, wherein said sensor comprises a microphone.

33 77.

<sup>31</sup>  
A method as claimed in Claim <sup>31</sup>75, wherein said sensor is a chest motion sensor.

34 78.

<sup>31</sup>  
A method as claimed in Claim <sup>31</sup>75, wherein said sensor is an airflow sensor.

35 79.

<sup>30</sup>  
A method as claimed in Claim <sup>30</sup>74, further comprising a sensor in electrical connection with said controller, said sensor being capable of detecting the position of the tongue as a function of muscle tone of the same and providing an electrical signal to said controller to activate said driving coil.

36 80.

<sup>35</sup>  
A method as claimed in Claim <sup>35</sup>79 wherein said sensor is a piezoelectric element.

37 81.

A method, comprising:  
suspending the base of a patient's tongue, said suspension being conducted by attaching said base of the tongue to a bone using sutures.

38 82.

<sup>37</sup>  
A method as claimed in Claim <sup>37</sup>81, wherein said suture is threaded through the patient's tongue using a suture passer, said suture passer comprising:  
a) a body defining a bore passing therethrough, said body having an inner wall; and,  
b) a rod portion, said rod portion located in said hollow body, said body being provided with an opening for threading of a suture into said body, said rod axially movable within said body to slide within said body past said opening to secure a suture into said body by wedging the suture between said rod and said inner wall.

39 83.

<sup>38</sup>  
A method as claimed in Claim <sup>38</sup>82, wherein said suture passer further comprises a piercing tip.

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40 84.

A method as claimed in Claim 81, wherein said suture is attached to an implantable electrode for implantation within a patient and capable of activating a nerve for controlling the position of the tongue; and further comprising the step of implanting an induction coil in the patient in electrical connection with said electrode.

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41 85.

A method as claimed in Claim 84, further comprising the step of providing an externally positionable driving coil for location outside the patient, and drivable with appropriate current to create a magnetic field and induced current in said induction coil, for delivering energy to said induction coil such that said induction coil can deliver energy to said implantable electrode to activate a patient's nerve.

42 86.

A method as claimed in Claim 85, further comprising the step of providing an electric current controller for creating and controlling said magnetic field in said driving coil.

43 87.

A method as claimed in Claim 86, further comprising an external sensor in electrical connection with said controller, said sensor being capable of detecting a characteristic of airway obstruction, and when so detecting, providing an electrical signal to said controller to activate said driving coil.

44 88.

A method as claimed in Claim 87, wherein said sensor comprises a microphone.

45 89.

A method as claimed in Claim 87, wherein said sensor is a chest motion sensor.

46 90.

A method as claimed in Claim 87, wherein said sensor is an airflow sensor.

47 91.

A method as claimed in Claim 86, further comprising a sensor in electrical connection with said controller, said sensor being capable of detecting the position of the tongue as a function of muscle tone of the same and providing an electrical signal to said controller to activate said driving coil.

48 92.

A method as claimed in Claim 91, wherein said sensor is a piezoelectric element.

49 93.

A method as claimed in Claim 81, wherein said suture is threaded through the patient's tongue using a suture passer, said suture passer comprising a pair of rods each having a handle end and an arc-shaped piercing tip facing one another, each tip having a suture grasping segment which, when the tips are in an adjacent position to one another, allows suture to be transferred from one piercing tip to the other, said rods and said piercing tips being rotatable about one another by squeezing together or release of said handles, such that said piercing tips penetrate a tissue from both sides and suture is passed through the hole formed by said piercing tips.

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- 50 94. A method as claimed in Claim ~~93~~<sup>49</sup>, wherein said handles are spring-biased such that said piercing tips are in said adjacent position.
- 51 95. A method as claimed in Claim ~~93~~<sup>49</sup>, wherein one of said rods is provided with a rotation bearing for the other of said rods.
- 52 96. A method as claimed in Claim ~~93~~<sup>49</sup>, wherein suture holding and release means are provided to at least one of said piercing tips.
- 53 97. A method as claimed in Claim ~~93~~<sup>49</sup>, wherein said piercing tips are provided with opposed and mating slots to facilitate the selective transfer of suture from one of said piercing tips to the other.
- 54 98. A method as claimed in Claim ~~97~~<sup>53</sup>, wherein said slots are angled with respect to the longitudinal axis of said piercing tips.
- 55 99. A method as claimed in Claim ~~90~~<sup>5</sup>, wherein said bone anchor inserter comprises a driving end, and wherein said driving end is provided with a retractable pin element which contacts and is forced backwardly as said bone anchor is inserted into bone until said pin element causes an electrical shut-off of said bone anchor inserter.
100. A method as claimed in Claim ~~81~~<sup>37</sup>, wherein said suture is inserted using a suture passer, said suture passer comprising a straight tube defining a lumen, and comprising a rod reciprocable within said lumen, said rod being formed from an elastic material such that when retracted into said tube it is substantially straight and such that when projected forwardly from said tube the portion of said rod projecting from tube bends to form a circular configuration, said rod having suture holding and release means.
101. A method as claimed in Claim ~~100~~<sup>55</sup>, wherein said rod is formed with a second lumen and a tissue drilling needle passing through said second lumen.
102. A method as claimed in Claim ~~101~~<sup>56</sup>, wherein said suture holding and release means cooperates with said tissue drilling needle.

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**Remarks**

Receipt is acknowledged of the Office Action of August 31, 1998. Reconsideration of the application is respectfully requested.

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